



For a complete list of the postulates and theorems in this chapter, see p. S82.

## Vocabulary

cross products.....	455	proportion.....	455	scale factor.....	495
dilation.....	495	ratio.....	454	similar.....	462
extremes.....	455	scale.....	489	similar polygons.....	462
indirect measurement.....	488	scale drawing.....	489	similarity ratio.....	463
means.....	455				

Complete the sentences below with vocabulary words from the list above.

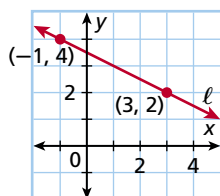
1. An equation stating that two ratios are equal is called a(n) \_\_\_\_.
2. A(n) \_\_\_\_ is a transformation that changes the size of a figure but not its shape.
3. In the proportion  $\frac{u}{v} = \frac{x}{y}$ , the \_\_\_\_ are  $v$  and  $x$ .
4. A(n) \_\_\_\_ compares two numbers by division.

## 7-1 Ratio and Proportion (pp. 454–459)

### EXAMPLES

- Write a ratio expressing the slope of  $\ell$ .

$$\begin{aligned}\text{slope} &= \frac{\text{rise}}{\text{run}} \\ &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{4 - 2}{-1 - 3} \\ &= \frac{2}{-4} = -\frac{1}{2}\end{aligned}$$



- Solve the proportion.

$$\frac{2}{4(x-3)} = \frac{x-3}{50}$$

$$4(x-3)^2 = 2(50)$$

$$4(x-3)^2 = 100$$

$$(x-3)^2 = 25$$

$$x-3 = \pm 5$$

$$x-3 = 5 \text{ or } x-3 = -5$$

$$x = 8 \text{ or } x = -2$$

*Cross Products Prop.*

*Simplify.*

*Divide both sides by 4.*

*Find the square root of both sides.*

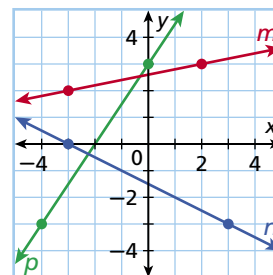
*Rewrite as two eqns.*

*Add 3 to both sides.*

### EXERCISES

Write a ratio expressing the slope of each line.

5.  $m$
6.  $n$
7.  $p$



8. If 84 is divided into three parts in the ratio 3:5:6, what is the sum of the smallest and the largest part?
9. The ratio of the measures of a pair of sides of a rectangle is 7:12. If the perimeter of the rectangle is 95, what is the length of each side?

Solve each proportion.

$$10. \frac{y}{7} = \frac{9}{3}$$

$$12. \frac{x}{4} = \frac{9}{x}$$

$$14. \frac{12}{2x} = \frac{3x}{32}$$

$$11. \frac{10}{4} = \frac{25}{s}$$

$$13. \frac{4}{z-1} = \frac{z-1}{36}$$

$$15. \frac{y+1}{24} = \frac{2}{3(y+1)}$$